Range Trend in the Cabezon Area

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Long-term Range Trend

Long-term range condition is difficult to obtain when monitoring and evaluating an area. We can usually come up with long-term stocking rates, however, by observing "apparent trend" over a few years. We may draw false conclusions about which direction the trend in range condition is moving or which ecological stage of plant succession we are observing. The Cabezon (big head) area of New Mexico has been studied and monitored for many years. Although new monitoring techniques are used today, it is interesting to follow-up on older methods for evaluating range trend on an area.

Grazing History

The Cabezon area is located about 50 miles northwest of Albuquerque, N. Mex., and has had a history of grazing by

Cabezon Peak south of the old ghost town of Cabezon.

domestic livestock for over 230 years. Early Spanish settlers began grazing on land grants in the area about 1753. By 1774, at least 10,000 head of cattle grazed in the Cuba or Rio Puerco valley and adjacent areas, although most early grazing was principally by sheep and goats. About 1848 there were 10,000 to 12,000 sheep grazing a portion of the area. By 1853, there were approximately 50,000 sheep in the country during the summer. By 1865, the sheep numbers were approximately 15,000 plus 1,000 cattle. By 1870, the peak in livestock numbers occurred with the two largest operators in the area owning a total of 240,000 sheep and 9,000 cattle. These large ranchers began renting out their livestock on the "partido" basis. This was an arrangement whereby the owner rented out stock capital at a fixed rate through a contract. The old rates were as high as 20 lambs per 100 ewes per year.

With the coming of the railroad in 1882, an outside market was created for the area's livestock. The village of Cabezon was a flourishing trading center with three stores and seven saloons by 1890. In 1897, there were 84,000 sheep grazing the Rio Puerco valley. By the turn of the century, livestock numbers began to slowly decrease to 52,000 sheep in 1904, 15,000 sheep in 1913, and also in 1926. By 1936, after the Taylor Grazing Act and just before the Farm Tenant Act, livestock numbers increased slightly; but after World War II, livestock numbers began to decline again. Most of the area ranchers converted from sheep to cattle. The area's human population dwindled and after the irrigation dams along the Rio Puerco washed out, Cabezon became a ghost town in 1951. During the 1960's and 1970's, there were approximately 5,000 cattle and, presently, there are about 4,000 cattle and 25 sheep grazing on Bureau of Land Management permits in the area.

Method of Monitoring

The Bureau of Land Management began monitoring the trend in range condition in the Cabezon area in 1951 on twelve grazing allotments. The evaluation method was developed by Kenneth W. Parker and involved three steps. *Step 1:* Permanent 100-foot staked transects in clusters of three were installed in key areas. These areas responded to management and comparative readings were taken periodically through the years. *Step 2:* Measurements were taken and vegetation frequency, ground cover, and floristic composition were summarized. A tape was stretched between stakes. Observations were made at 1-foot intervals using a 3/4-inch loop welded to a 36-inch road with a 1/8-inch diameter. Readings were made from the right side of the tape. *Step 3:* General view and closeup photographs were taken from permanent photo points.

During the first 13 years (1951-1964), transects were read annually. After 1964, the studies were discontinued until 1980, 29 years after the first transects were established. Much of the area was grazed continuously yearlong. Many range improvements such as fences, stock ponds, and wells with pipeline systems were constructed in the area during the last 29 years by the Bureau of Land Management.

Results

Changes in vegetative cover, litter and bare ground were

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as follows:

	1951-64	1980	Change
Vegetative cover	13%	22%	+41%
Litter	6%	18%	+63%
Bare ground	78%	54%	-30%

Conclusions

During the 1951 to 1980 period, ecological succession generally moved away from the potential or climax plant communities on most sites for a time, then gradually toward the potential or climax. The ecological range condition advanced from a generally low-seral stage on many sites to a mid-seral stage.[1] This is best shown by the increase in woody species and decrease in annual forbs. The occurrence of soapweed and broom snakeweed measured in 1980 may be cyclic, short-term changes that may not necessarily indicate a decline in range condition. Short-term changes in range condition in most areas are usually too subtle to detect.

Several cool-season species have begun to appear in the composition which could indicate an improvement in management through seasonal rest periods. Several of the new species appearing in the composition could be considered decreasers for some sites in the area. There is an upward trend in vegetative cover and litter for most sites. There has also been a significant decrease in the percent of bare ground on all sites monitored.

In summary, the long-term trend in range condition seems to be steadily improving on the allotments monitored, even though intensive grazing management does not occur on all allotments. The upward trend could be the result of not only better management on some allotments, but also improved livestock distribution through development and construction of more watering places and more fences.

Typical of the gully eroson in the area with steep banks that slough off and soils that dissolve and "piping" occurs.

[1]Low-seral = poor range condition
Mid-seral = fair range condition
High-seral = good range condition

Table 1. Frequency and floristic composition changes were as follows:

Species Composition	1951-57	1958-80	1951-80	1980
Alkali sacaton *(Sporobolus airoides)*	DST	IST		
Galleta grass *(Hilaria jamesii)*	DST	IST		
Blue grama *(Bouteloua gracilis)*	DST	IST		
Sand dropseed *(Sporobolus cryptandrus)*	DST	IST		
Ring muhly *(Muhlenbergia torreyi)*	DST	IST		
Black grama *(Bouteloua eriopoda)*			ISL	
Red threeawn *(Aristida longiseta)*			ISL	
Bottlebrush squirreltail *(Sitanion hystrix)*				*
Indian ricegrass *(Oryzopsis hymenoides)*				*
Threadleaf sedge *(Carex filifolia)*				*
Hairy grama *(Bouteloua hirsuta)*				*
Mat muhly *(Muhlenbergia richardsonis)*			DSL	
Broom snakeweed *(Xanthocephalum sarothrae)*			ISU	
Big sagebrush (Artemisia tridentata)			ISU	
Winterfat *(Ceratoides lanata)*			ISU	
Feather indigobush *(Dalea formosa)*			ISU	
Soapweed *(Yucca glauca)*			ISU	
One-seed juniper *(Juniperus monosperma)*			ISU	
Mormon tea *(Ephedra torreyana)*			NC	
Prickly pear *(Opuntia compressa)*			NC	
Shadscale *(Atriplex confertifolia)*			DSL	
Perennial forbs			ISL	
Annual forbs			DSU	

*Species appearing for the first time in the 1980 composition.
DST—declined steadly
DSL—decreased slightly
DSU—decreased substantially
NC—no change
IST—increased steadily
ISL—increased slightly
ISU—increased substantially

Some of the channels in the area have begun to stabilize and revegetation is occurring.

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Editor's Note: This article brings together into one place historical and technical information to date relative to chaining for brush control. It is valuable for present use as well as for future reference.—**D. Freeman.**

Chains for Mechanical Brush Control

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During a large portion of the 20th century, range managers have been trying to develop and implement technologies for manipulation of plant communities to enhance forage and browse production. The vastness of rangelands dwarfs the manipulator and negates labor intensive practices. Rocks, steep slopes, and accumulations of woody plant material on rangelands blunt, twist, and bend agricultural implements into impotency. The relatively low productivity of rangelands in comparison to intensively cropped farmland has produced scant returns in payment for expensive range improvement technologies. Within these constraints of high productivity, durability, and low cost has evolved the unique rangeland implement—the chain. The process of using the chain for rangeland rehabilitation is called chaining. Chaining is accomplished by dragging heavy, navy anchor chains in a U-shaped, half circle, or J-shaped pattern between two crawler tractors traveling parallel in the same direction.

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Evolution of the Chain

The idea of dragging a strong line between tractors to down brush and small trees has existed as long as the have been tractors with sufficient power to pull the line. Early lines usually consisted of a twisted cable. B.W. Allred reported in 1949 that cabling, the process of pull a cable between two tractors traveling in the same direction, had been used in Texas and Oklahoma to reduce mesquite *(Prosopis glandulosa)* for a number of years. Similar comments have been made by C.E. Fisher of the Texas A&M Agricultural Experiment Station.

Simon Wolff of the Soil Conservation Service (SCS), U.S. Department of Agriculture, reported that in 1945 it cost $4.00